

SAFETY DATA SHEET

SDS ID NO.: 0109MAR022
Revision Date: 10/08/2019

1. IDENTIFICATION

Product Name: MarkWest Natural Gas Liquids
Synonym: Natural Gas Liquids; NGL; Y-Grade; Demethanized raw feed mix
Product Code: 0109MAR022
Chemical Family: Hydrocarbon Mixture
Recommended Use: Hydrocarbon.
Restrictions on Use: All others.

Manufacturer, Importer, or Responsible Party Name and Address:

MarkWest Energy Partners, L.P.
a subsidiary of MPLX LP
1515 Arapahoe Street
Tower 1, Suite 1600
Denver, Colorado 80202

SDS information: 1-419-421-3070 (M-F, 8-5 EST)

Emergency Telephone: CHEMTREC: 1-800-424-9300

2. HAZARD IDENTIFICATION

Classification

OSHA Regulatory Status

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable gases	Category 1
Gases under pressure	Liquefied Gas
Simple asphyxiant	-
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1A
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Chronic aquatic toxicity	Category 2

Hazards Not Otherwise Classified (HNOC)

Static accumulating flammable liquid
May release hydrogen sulfide gas
Liquid product may cause freeze burn

Label elements

EMERGENCY OVERVIEW

Danger

Extremely flammable gas
Contains gas under pressure; may explode if heated
May accumulate electrostatic charge and ignite or explode
May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell
May displace oxygen and cause rapid suffocation
May cause drowsiness or dizziness

Contact with liquid may cause frostbite
 May cause genetic defects
 May cause cancer
 Suspected of damaging fertility or the unborn child
 May cause damage to organs (nervous system) through prolonged or repeated exposure
 Toxic to aquatic life with long lasting effects



Appearance Colorless Gas

Physical State Gas

Odor Distinct Hydrocarbon

Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Keep away from heat/sparks/open flames/hot surfaces. - No smoking
 Do not breathe gas/vapors
 Use only outdoors or in a well-ventilated area
 Wear protective gloves/protective clothing/eye protection/face protection
 Wash hands and any possibly exposed skin thoroughly after handling
 Avoid release to the environment

Precautionary Statements - Response

If exposed, concerned or you feel unwell: Get medical attention
 If inhaled: Remove person to fresh air and keep comfortable for breathing.
 Call a poison center or doctor if you feel unwell
 Leaking gas fire: Do not extinguish, unless leak can be stopped safely
 Eliminate all ignition sources if safe to do so
 Collect spillage

Precautionary Statements - Storage

Store in a well-ventilated place. Keep container tightly closed
 Protect from sunlight
 Store locked up

Precautionary Statements - Disposal

Dispose of contents/container at an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Composition Information:

Name	CAS Number	% Concentration
Natural Gas, Raw Liquid Mix	64741-48-6	100
Butane (mixed isomers)	106-97-8	0-95
Propane	74-98-6	3-82
Pentane (mixed isomers)	109-66-0	0-77
Ethane	74-84-0	0-67
Hexane (mixed isomers)	110-54-3	0-66
Heptane (mixed isomers)	142-82-5	0-27
Carbon Dioxide	124-38-9	0-4
Methane	74-82-8	0-2.5
Benzene	71-43-2	0-0.8
Toluene	108-88-3	0-0.5
Xylene (mixed isomers)	1330-20-7	0-0.1

Hydrogen sulfide	7783-06-4	<0.06
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All concentrations are percent by weight unless material is a gas. Gas concentrations are in percent by volume.

4. FIRST AID MEASURES

First Aid Measures

- General Advice:** In case of accident or if you feel unwell, seek medical advice immediately (show directions for use or safety data sheet if possible).
- Inhalation:** Remove to fresh air. If not breathing, utilize bag valve mask or other form of barrier device to institute rescue breathing. If breathing is difficult, ensure airway is clear, give oxygen and continue to monitor. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Get immediate medical attention.
- Skin Contact:** If liquefied product has caused frostbite, remove contaminated clothing. Thaw frost bitten areas slowly with lukewarm water or by wrapping affected areas with blankets. Do not rub affected areas. Let circulation reestablish itself naturally, exercising area if possible. Get immediate medical attention.
- Eye Contact:** Flush with large amounts of tepid water for at least 15 minutes. Gently remove contact lenses while flushing. Eyelids should be held away from the eyeball to ensure thorough rinsing. If frostbite is suspected (cloudy lens or greyish white tissue around the eye) get immediate medical attention.
- Ingestion:** If swallowed, immediately call a poison control center or physician. Do not induce vomiting. If spontaneous vomiting occurs, keep head below hips, or if patient is lying down, turn body and head to side to prevent aspiration and monitor for breathing difficulty.

Most important signs and symptoms, both short-term and delayed with overexposure

- Adverse Effects:** Asphyxiant gas. High concentrations in the immediate area can displace oxygen causing the feeling of suffocation and can cause headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue from oxygen deprivation. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since loss of smell rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions. Contact with product may cause frostbite. Prolonged or repeated exposure may cause adverse effects to the nervous system.

Indication of any immediate medical attention and special treatment needed

- Notes To Physician:** Inhalation exposure can produce toxic effects. Treat intoxications as hydrogen sulfide exposures. At high concentrations hydrogen sulfide may produce pulmonary edema, respiratory depression, and/or respiratory paralysis. The first priority in treatment should be the establishment of adequate ventilation and the administration of 100% oxygen. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. This material (or a component) sensitizes the myocardium to the effects of sympathomimetic amines. Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in individuals exposed to this material. Administration of sympathomimetic drugs should be avoided.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media

For small fires, Class B fire extinguishing media such as CO₂ or dry chemical can be used. For large fires use water spray or fog. Firefighting should be attempted only by those who are adequately trained and equipped with proper protective equipment.

Unsuitable extinguishing media

DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Specific hazards arising from the chemical

This product has been determined to be an extremely flammable gas per the OSHA Hazard Communication Standard and should be handled accordingly. May accumulate electrostatic charge and ignite or explode. Sealed containers may rupture when heated. A phenomena known as boiling liquid expanding vapor explosions (Bleve) can occur when a liquid in a pressurized container comes in close proximity to a fire and reaches a temperature well above its boiling point. A catastrophic failure of the vessel can occur, resulting in flying equipment fragments, a shock wave and a fireball causing serious damage and death. For additional fire related information see NFPA 30 or the Emergency Response Guidebook 115.

Hazardous combustion products

Smoke, carbon monoxide, and other products of incomplete combustion.

Explosion data

Sensitivity to Mechanical Impact No.

Sensitivity to Static Discharge Yes.

Special protective equipment and precautions for firefighters

Firefighters should wear full protective clothing and positive-pressure self-contained breathing apparatus (SCBA) with a full face-piece, as appropriate. Isolate hazard area. If safe to do so, stop the flow of gas and allow fire to burn out. Extinguishing the flame before shutting off the supply can cause the formation of explosive mixtures. In some cases it may be preferred to allow the flame to continue to burn. Use extreme caution when fighting liquefied petroleum gas fires. Keep surrounding area cool with water spray from a distance and prevent further ignition of combustible material. Avoid use of solid water streams. Contact with water and liquefied product can cause increased vaporization.

Additional firefighting tactics

FIRES INVOLVING TANKS OR CAR/TRAILER LOADS: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Cool containers with flooding quantities of water until well after the fire is out. Do not direct water at source of leak or safety devices; icing may occur. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

EVACUATION: Consider initial downwind evacuation for at least 1000 feet. If tank, rail car or tank truck is involved in a fire, ISOLATE for 5280 feet (1 mile) in all directions; also, consider initial evacuation of 5280 feet (1 mile) in all directions.

NFPA

Health 1

Flammability 4

Instability 0

Special Hazard -

6. ACCIDENTAL RELEASE MEASURES

Personal precautions:

Keep people away from and upwind of spill/leak. Isolate and evacuate area. Shut off source if safe to do so. Eliminate all ignition sources. Use spark-proof tools and explosion-proof equipment. Leaks may self-ignite due to static accumulation. Distant ignition and flashback are possible. Monitor area for flammable or explosive atmosphere. Before entry, especially into confined areas, check atmosphere with an appropriate monitor.

Protective equipment:

Use personal protection measures as recommended in Section 8.

Emergency procedures:

Leaking containers should be moved outdoors or to well-ventilated area and contents transferred to a suitable container. Product vapor is heavier than air and can collect in low areas that are without sufficient ventilation. Notify local health and pollution control agencies, if appropriate.

Environmental precautions:

If leaking, take appropriate steps to disperse gas.

Methods and materials for containment:

Prevent further leakage or spillage if safe to do so.

Methods and materials for cleaning up:

Shut off gas supply, if safe to do so. Allow equipment to depressurize. Isolate area until gas has dispersed.

7. HANDLING AND STORAGE

Safe Handling Precautions:

Avoid breathing fumes, gas, or vapors. Use only outdoors or with adequate ventilation. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. Gas may accumulate along the ground, settle in low lying areas or be moved by ventilation and ignited by many sources such as pilot lights, sparks, electric motors, static discharge, or other ignition sources at locations distant from material handling. Flashback may occur along vapor trails. Use only non-sparking tools. Use appropriate grounding and bonding practices. Bonding and grounding may be insufficient to eliminate the hazard from static electricity. Use personal protection recommended in Section 8. Exercise good personal hygiene including removal of soiled clothing and prompt washing with soap and water. Do not cut, drill, grind or weld on empty containers since explosive residues may remain. Comply with all applicable EPA, OSHA, NFPA and consistent state and local requirements.

Components of this product are basically non-conductors of electricity and can become electrostatically charged during mixing, filtering or pumping at high flow rates. If this charge reaches a sufficiently high level, sparks can form that may ignite the vapors of flammable liquids. Sudden release of hot organic vapors or mists from process equipment operating at elevated temperature and pressure, or sudden ingress of air into vacuum equipment, may result in ignitions without the presence of obvious ignition sources.

Harmful concentrations of hydrogen sulfide (H₂S) gas can accumulate in excavations and low-lying areas as well as the vapor space of storage and bulk transport compartments. Stay upwind and vent open hatches before unloading. Sulfur containing products may cause polysulfide deposits (iron sulfide) to form inside iron storage tanks. These pyrophoric deposits, upon exposure to air, can ignite spontaneously.

Storage Conditions:

Store in properly closed containers that are appropriately labeled and in a cool, well-ventilated area. Keep product and empty container away from heat and sources of ignition. Do not puncture or incinerate container.

Incompatible Materials

Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Name	ACGIH TLV	OSHA PELS:	NIOSH IDLH
Natural Gas, Raw Liquid Mix 64741-48-6	-	-	-
Butane (mixed isomers) 106-97-8	1000 ppm STEL	-	-
Propane 74-98-6	Simple asphyxiant	TWA: 1000 ppm TWA: 1800 mg/m ³	2100 ppm
Pentane (mixed isomers) 109-66-0	1000 ppm TWA	TWA: 1000 ppm TWA: 2950 mg/m ³	1500 ppm
Ethane 74-84-0	Simple asphyxiant	-	-
Hexane (mixed isomers) 110-54-3	50 ppm TWA Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 500 ppm TWA: 1800 mg/m ³	1100 ppm
Heptane (mixed isomers) 142-82-5	400 ppm TWA 500 ppm STEL	TWA: 500 ppm TWA: 2000 mg/m ³	750 ppm
Carbon Dioxide 124-38-9	5000 ppm TWA 30000 ppm STEL	TWA: 5000 ppm TWA: 9000 mg/m ³	40000 ppm
Methane 74-82-8	Simple asphyxiant	-	-
Benzene 71-43-2	0.5 ppm TWA 2.5 ppm STEL Skin - potential significant contribution to overall exposure by the cutaneous route	TWA: 10 ppm (applies to industry segments exempt from the benzene standard) TWA: 1 ppm STEL: 5 ppm	500 ppm

		(see 29 CFR 1910.1028)	
Toluene 108-88-3	20 ppm TWA	TWA: 200 ppm Ceiling: 300 ppm	500 ppm
Xylene (mixed isomers) 1330-20-7	100 ppm TWA 150 ppm STEL	TWA: 100 ppm TWA: 435 mg/m ³	900 ppm
Hydrogen sulfide 7783-06-4	1 ppm TWA 5 ppm STEL	Ceiling: 20 ppm Peak: 50 ppm	100 ppm

Notes: No further information available.

Engineering measures: Local or general exhaust required in an enclosed area or when there is inadequate ventilation. Use mechanical ventilation equipment that is explosion-proof. Monitor atmospheric oxygen levels.

Personal protective equipment

Eye protection: Goggles or faceshield may be needed when handling pressurized gases.

Skin and body protection: Wear insulated gloves when handling pressurized gases to prevent skin contact and frostbite or freeze burn. Contact the glove manufacturer for specific advice on glove selection and breakthrough times.

Respiratory protection: Use atmosphere supplying respirators in the event of oxygen deficiency, when material produces vapors that exceed permissible limits, or when excessive vapors are generated. Observe respirator assigned protection factors (APFs) criteria cited in federal OSHA 29 CFR 1910.134.

Note: Air purifying respirators are not to be used in atmospheres that exceed the maximum use concentration (as directed by regulation or the manufacturers instructions), in oxygen deficient atmospheres, (less than 19.5% oxygen) or under conditions that are immediately dangerous to life and health (IDLH).

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Do not smoke while handling.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Gas
Appearance	Colorless Gas
Color	No data available
Odor	Distinct Hydrocarbon
Odor Threshold	No data available.

<u>Property</u>	<u>Values (Method)</u>
Melting Point / Freezing Point	No data available.
Initial Boiling Point / Boiling Range	No data available.
Flash Point	No data available.
Evaporation Rate	No data available.
Flammability (solid, gas)	Not applicable.
Flammability Limit in Air (%):	
Upper Flammability Limit:	No data available.
Lower Flammability Limit:	No data available.
Explosion limits:	No data available.
Vapor Pressure	No data available.
Vapor Density	No data available.
Specific Gravity / Relative Density	No data available.
Water Solubility	No data available.
Solubility in other solvents	No data available.
Partition Coefficient	No data available.
Decomposition temperature	No data available.
pH:	Not applicable.

Autoignition Temperature	No data available.
Kinematic Viscosity	No data available.
Dynamic Viscosity	No data available.
Explosive Properties	No data available.
VOC Content (%)	No data available.
Density	No data available.
Bulk Density	Not applicable.

10. STABILITY AND REACTIVITY

<u>Reactivity</u>	The product is non-reactive under normal conditions.
<u>Chemical stability</u>	Stable under recommended storage conditions.
<u>Possibility of hazardous reactions</u>	None under normal processing.
<u>Hazardous polymerization</u>	Will not occur.
<u>Conditions to avoid</u>	Sources of heat or ignition.
<u>Incompatible Materials</u>	Strong oxidizing agents.
<u>Hazardous decomposition products</u>	None known under normal conditions of use.

11. TOXICOLOGICAL INFORMATION

Potential short-term adverse effects from overexposures

Inhalation	May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination. In high concentration the gas may cause suffocation. Victim may not be aware of asphyxiation. May release highly toxic hydrogen sulfide gas that quickly fatigues the sense of smell. Concentrations of >1000 ppm will cause immediate unconsciousness and death through respiratory paralysis.
Eye contact	Gas or vapor is generally non-irritating to eyes. Direct contact with liquefied product can cause freeze burn or frostbite.
Skin contact	Gas or vapor is generally non-irritating to skin. Direct contact with liquefied product can cause freeze burn or frostbite.
Ingestion	Aspiration into lungs may cause chemical pneumonia and lung damage.

Acute toxicological data

Name	Oral LD50	Dermal LD50	Inhalation LC50
Natural Gas, Raw Liquid Mix 64741-48-6	-	-	-
Butane (mixed isomers) 106-97-8	-	-	658 mg/L (Rat) 4 h
Propane 74-98-6	-	-	> 1,464 mg/L (Rat) 15 min
Pentane (mixed isomers) 109-66-0	-	-	364 mg/L (Rat) 4 h
Ethane 74-84-0	-	-	658 mg/L (Rat) 4 h
Hexane (mixed isomers) 110-54-3	15000 mg/kg (Rat)	3000 mg/kg (Rabbit)	48000 ppm (Rat) 4 h
Heptane (mixed isomers) 142-82-5	-	3000 mg/kg (Rabbit)	103 g/m ³ (Rat) 4 h
Carbon Dioxide 124-38-9	-	-	-
Methane	-	-	326 mg/m ³ (Mouse) 2 h

74-82-8			
Benzene 71-43-2	> 2000 mg/kg (Rat)	> 5000 mg/kg (Rabbit)	> 20 mg/l (Rat) 4 h
Toluene 108-88-3	> 2000 mg/kg (Rat)	8390 mg/kg (Rabbit)	12.5 mg/L (Rat) 4 h
Xylene (mixed isomers) 1330-20-7	> 2000 mg/kg (Rat)	> 2000 mg/kg (Rabbit)	> 5.04 mg/L (Rat) 4 h
Hydrogen sulfide 7783-06-4	-	-	444 ppm (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

PROPANE, BUTANE and PENTANE: Laboratory animal studies indicate exposure to extremely high levels (1 to 10 vol.% in air) may cause cardiac arrhythmias (irregular heartbeats) which may be serious or fatal.

METHANE and ETHANE: Exposure to high levels of these gases produce weak central nervous system (CNS) depressant effects without significant potential for systemic toxicity. At very high levels they act as asphyxiant gases by diluting and displacing oxygen. Symptoms of persons exposed to oxygen deficient atmospheres include headache, dizziness, incoordination, cyanosis and narcosis. Extremely high concentrations can produce unconsciousness followed by death.

N-HEXANE: Short-term overexposure to n-hexane vapor may cause headache, nausea, vomiting, dizziness, lightheadedness, loss of consciousness, coma, and even death in humans. Respiratory effects of overexposure may include nose, throat, and lung irritation, coughing, wheezing, and shortness of breath. Direct and prolonged contact with liquid may cause dryness and redness of the skin. Long-term or repeated overexposure to n-hexane can cause peripheral nerve damage. Initial signs are numbness of the fingers and toes. Motor/muscle weakness can occur in the digits, but may also involve muscles of the arms, forearms, and thighs. Onset of these signs may be delayed for several months to a year after initial exposure. Repeated and sustained inhalation exposure to high vapor concentrations of n-hexane resulted in degenerative changes in the testes and reduced sperm count in male laboratory rats.

CARBON DIOXIDE: Carbon dioxide is a simple asphyxiant and has no warning properties (such as odor). Inhalation of high concentrations can produce mild narcotic effects and stimulation of the respiratory centers. Eye, nose and throat irritation can occur at very high exposure concentrations. Poisoning may affect the lungs, heart, kidney and central nervous system. Sleepiness, mental confusion, giddiness, lassitude (weakness), noise in the ear, weakened reflexes, tremors, flaccid paralysis, coma, and death may all occur from carbon dioxide poisoning.

BENZENE: Benzene exposure may cause skin, eye and respiratory irritation. Excessive exposures may cause central nervous system effects. Numerous studies of workers exposed to airborne benzene for prolonged or repeated periods show strong evidence that overexposure can cause cancer of the blood, AML (acute myeloid leukemia), along with other disorders indicating damage to the blood forming organs including aplastic anemia, leukopenia, thrombocytopenia, and the development of myelodysplastic syndrome. Some studies of pregnant women occupationally exposed to benzene suggest associations with an increased risk of miscarriage, stillbirth, reduced birth weight, and gestational age. Prolonged and repeated exposure to benzene has induced chromosomal aberrations in circulating human lymphocytes, in bone marrow cells of laboratory animals, and in sperm cells of both humans and laboratory animals.

TOLUENE: Inhalation abuse of toluene at high concentrations has been associated with adverse effects on the liver, kidney and nervous system, and can cause nervous system depression, cardiac arrhythmias, and death. Studies of workers indicate long-term exposure may be related to impaired color vision and hearing. Some studies of workers suggest long-term exposure may be associated with neurobehavioral and mental functional changes. Laboratory animal studies indicate some changes in reproductive organs after exposure to high airborne concentrations, but no significant effects on mating performance or reproduction were observed. Positive findings include small increases in minor skeletal

and visceral malformations and developmental delays following maternal exposure to high concentrations. Adverse effects on the liver, kidney, thymus and nervous system of laboratory animal were observed after very high levels of prolonged and repeated exposure.

XYLENE: Overexposure to airborne xylene may cause upper respiratory tract irritation, headache, cyanosis, blood serum changes, nervous system damage and narcosis. Impaired neurological function has been reported in workers exposed to solvents including xylene. Laboratory animal studies have shown evidence of impaired hearing after prolonged exposure high airborne concentrations. Laboratory animal studies suggest some changes in reproductive organs after exposure to high airborne concentrations of xylene without an effect on reproduction. Skeletal and visceral malformations, developmental delays, and increased fetal resorptions were observed in laboratory animals after extremely high airborne concentrations with evidence of maternal toxicity. Adverse effects on the liver, kidney, and bone marrow were observed in laboratory animals after prolonged and repeated exposure to high airborne concentrations of xylene.

HYDROGEN SULFIDE: Hydrogen sulfide has a strong, unpleasant odor resembling that of rotten eggs. Odor, however, is not a reliable means for detecting potentially dangerous concentration of the gas, as the sense of smell diminishes very rapidly at concentrations of 50 ppm or higher. Eye irritation has been reported at 4 ppm. Irritation of the respiratory tract may occur at 50 ppm. Hydrogen sulfide gas may be fatal if inhaled in sufficient concentrations. Immediate loss of consciousness and death resulting from respiratory paralysis has occurred at concentrations as low as 500 ppm.

Adverse effects related to the physical, chemical and toxicological characteristics

Signs and Symptoms

Asphyxiant gas. High concentrations in the immediate area can displace oxygen causing the feeling of suffocation and can cause headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue from oxygen deprivation. Hydrogen sulfide can cause respiratory paralysis and death, depending on the concentration and duration of exposure. Do not rely on ability to smell vapors, since loss of smell rapidly occurs. Effects of overexposure include irritation of the nose and throat, nausea, vomiting, diarrhea, abdominal pain and signs of nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination and fatigue), irregular heartbeats, pulmonary edema, weakness and convulsions. Contact with product may cause frostbite. Prolonged or repeated exposure may cause damage to organs.

Acute toxicity

None known.

Skin corrosion/irritation

None known.

Serious eye damage/eye irritation

None known.

Sensitization

None known.

Mutagenic effects

May cause genetic defects.

Carcinogenicity

May cause cancer.

Cancer designations are listed in the table below

Name	ACGIH (Class)	IARC (Class)	NTP	OSHA
Natural Gas, Raw Liquid Mix 64741-48-6	Not Listed	Not Listed	Not Listed	Not Listed
Butane (mixed isomers) 106-97-8	Not Listed	Not Listed	Not Listed	Not Listed
Propane 74-98-6	Not Listed	Not Listed	Not Listed	Not Listed
Pentane (mixed isomers) 109-66-0	Not Listed	Not Listed	Not Listed	Not Listed
Ethane 74-84-0	Not Listed	Not Listed	Not Listed	Not Listed
Hexane (mixed isomers)	Not Listed	Not Listed	Not Listed	Not Listed

110-54-3				
Heptane (mixed isomers) 142-82-5	Not Listed	Not Listed	Not Listed	Not Listed
Carbon Dioxide 124-38-9	Not Listed	Not Listed	Not Listed	Not Listed
Methane 74-82-8	Not Listed	Not Listed	Not Listed	Not Listed
Benzene 71-43-2	Confirmed human carcinogen (A1)	Carcinogenic to humans (1)	Known to be human carcinogen	Known carcinogen
Toluene 108-88-3	Not Classifiable (A4)	Not Classifiable (3)	Not Listed	Not Listed
Xylene (mixed isomers) 1330-20-7	Not classifiable (A4)	Not classifiable (3)	Not Listed	Not Listed
Hydrogen sulfide 7783-06-4	Not Listed	Not Listed	Not Listed	Not Listed

Reproductive toxicity Suspected of damaging fertility or the unborn child.

Specific Target Organ Toxicity (STOT) - single exposure May cause drowsiness or dizziness.

Specific Target Organ Toxicity (STOT) - repeated exposure May cause damage to organs (nervous system) through prolonged or repeated exposure.

Aspiration hazard Potential for aspiration if swallowed.

12. ECOLOGICAL INFORMATION

Ecotoxicity This product should be considered toxic to aquatic organisms, with the potential to cause long lasting adverse effects in the aquatic environment.

Name	Algae/aquatic plants	Fish	Toxicity to Microorganisms	Crustacea
Natural Gas, Raw Liquid Mix 64741-48-6	-	-	-	-
Butane (mixed isomers) 106-97-8	-	-	-	-
Propane 74-98-6	-	-	-	-
Pentane (mixed isomers) 109-66-0	-	96-hr LC50 >1 - <10 mg/L Rainbow trout	-	48-hr EC50 = 9.7 mg/L Daphnia magna
Ethane 74-84-0	-	-	-	-
Hexane (mixed isomers) 110-54-3	-	96-hr LC50 = 2.5 mg/l Fathead minnow	-	-
Heptane (mixed isomers) 142-82-5	-	96-hr LC50 = 375 mg/L Tilapia	-	-
Carbon Dioxide 124-38-9	-	-	-	-
Methane 74-82-8	-	-	-	-
Benzene 71-43-2	72-hr EC50 = 29 mg/l Algae	96-hr LC50 = 5.3 mg/l Rainbow trout (flow-through)	-	48-hr EC50 = 8.76-15.6 mg/l Daphnia magna (Static)
Toluene 108-88-3	72-hr EC50 = 12.5 mg/l Algae	96-hr LC50 ≤ 10 mg/l Rainbow trout	-	48-hr EC50 = 5.46-9.83 mg/l Daphnia magna 48-hr EC50 = 11.5 mg/l Daphnia magna (Static)
Xylene (mixed isomers) 1330-20-7	72-hr EC50 = 11 mg/l Algae	96-hr LC50 = 8 mg/l Rainbow trout	-	48-hr LC50 = 3.82 mg/l Daphnia magna
Hydrogen sulfide 7783-06-4	-	96-hr LC50 = 0.016 mg/l Fathead minnow 96-hr LC50 = 0.013 mg/l Rainbow trout	-	-

<u>Persistence and degradability</u>	Expected to be inherently biodegradable.
<u>Bioaccumulation</u>	Has the potential to bioaccumulate.
<u>Mobility in soil</u>	Expected to rapidly partition to air.
<u>Other adverse effects</u>	No information available.

13. DISPOSAL CONSIDERATIONS

Description of Waste Residues

No information available.

Safe Handling of Wastes

Handle in accordance with applicable local, state, and federal regulations. Use personal protection measures as required. Use appropriate grounding and bonding practices. Use only non-sparking tools. Do not expose to heat, open flames, strong oxidizers or other sources of ignition. No smoking.

Disposal of Wastes / Methods of Disposal

The user is responsible for determining if any discarded material is a hazardous waste (40 CFR 262.11). Dispose of in accordance with federal, state and local regulations.

Methods of Contaminated Packaging Disposal

Empty containers should be completely drained and then discarded or recycled, if possible. Do not cut, drill, grind or weld on empty containers since explosive residues may be present. Dispose of in accordance with federal, state and local regulations.

14. TRANSPORT INFORMATION

DOT:

UN Proper Shipping Name:	Liquefied Petroleum Gas
UN/Identification No:	UN 1075
Class:	2.1
Packing Group:	Not applicable.

IATA:

UN Proper Shipping Name:	Liquefied Petroleum Gas
UN/Identification No:	UN 1075
Transport Hazard Class(es):	2.1
Packing Group:	Not applicable.
ERG code:	10L

IMDG:

UN Proper Shipping Name:	Liquefied Petroleum Gas
UN/Identification No:	UN 1075
Transport Hazard Class(es):	2.1
Packing Group:	Not applicable.
EmS No:	F-D, S-U
Marine Pollutant:	Yes

15. REGULATORY INFORMATION

US Federal Regulatory Information:

US TSCA Chemical Inventory Section 8(b): This product and/or its components are listed on the TSCA Chemical Inventory or are exempt.

EPA Superfund Amendment & Reauthorization Act (SARA):

SARA Section 302: This product may contain component(s) that have been listed on EPA's Extremely Hazardous Substance (EHS) List:

Name	CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs
Natural Gas, Raw Liquid Mix	NA
Butane (mixed isomers)	NA
Propane	NA
Pentane (mixed isomers)	NA
Ethane	NA
Hexane (mixed isomers)	NA
Heptane (mixed isomers)	NA
Carbon Dioxide	NA
Methane	NA
Benzene	NA
Toluene	NA
Xylene (mixed isomers)	NA
Hydrogen sulfide	500

SARA Section 304: This product may contain component(s) identified either as an EHS or a CERCLA Hazardous substance which in case of a spill or release may be subject to SARA reporting requirements:

Name	Hazardous Substances RQs
Natural Gas, Raw Liquid Mix	NA
Butane (mixed isomers)	NA
Propane	NA
Pentane (mixed isomers)	NA
Ethane	NA
Hexane (mixed isomers)	5000
Heptane (mixed isomers)	NA
Carbon Dioxide	NA
Methane	NA
Benzene	10
Toluene	1000 lb final RQ 454 kg final RQ
Xylene (mixed isomers)	100
Hydrogen sulfide	100

SARA Section 311/312: The following EPA hazard categories apply to this product:

Flammable
 Gas under pressure
 Hazard Not Otherwise Classified (HNOC)-Physical
 Simple asphyxiant
 Germ cell mutagenicity
 Carcinogenicity
 Reproductive toxicity
 Specific target organ toxicity
 Hazard Not Otherwise Classified (HNOC)-Health

SARA Section 313: This product may contain component(s), which if in exceedance of the de minimus threshold, may be subject to the reporting requirements of SARA Title III Section 313 Toxic Release Reporting (Form R).

Name	CERCLA/SARA 313 Emission reporting:
Natural Gas, Raw Liquid Mix	None
Butane (mixed isomers)	None
Propane	None
Pentane (mixed isomers)	None
Ethane	None
Hexane (mixed isomers)	1.0 % de minimis concentration
Heptane (mixed isomers)	None
Carbon Dioxide	None

Methane	None
Benzene	0.1 % de minimis concentration
Toluene	1.0 % de minimis concentration
Xylene (mixed isomers)	1.0 % de minimis concentration
Hydrogen sulfide	1.0 % de minimis concentration

State and Community Right-To-Know Regulations:

The following component(s) of this material are identified on the regulatory lists below:

Natural Gas, Raw Liquid Mix

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	Not Listed
Pennsylvania Right-To-Know:	Not Listed
Massachusetts Right-To Know:	Not Listed
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Butane (mixed isomers)

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0273
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 0273 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed

Propane

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1594
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1594 TPQ: 500 lb

Substances List:	
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Pentane (mixed isomers)	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1476
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1476 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Ethane	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0834
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 0834 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Hexane (mixed isomers)	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1340
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 1340 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1 lb RQ (air); 1 lb RQ (land/water)
Heptane (mixed isomers)	

Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1339
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic; Flammable
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Carbon Dioxide	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 0343
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Not Listed
New Jersey - Environmental Hazardous Substances List:	Not Listed
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Methane	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1202
Pennsylvania Right-To-Know:	Present
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic
Michigan Critical Materials Register List:	Not Listed
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1202 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	Not Listed
Benzene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Carcinogen, initial date 2/27/87 Developmental toxicity, initial date 12/26/97 Male reproductive toxicity, initial date 12/26/97
New Jersey Right-To-Know:	SN 0197

Pennsylvania Right-To-Know:	Environmental hazard; Special hazardous substance
Massachusetts Right-To Know:	Carcinogen; Extraordinarily hazardous
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin); Carcinogen (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Carcinogen; Extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Present
New Jersey - Special Hazardous Substances:	Carcinogen; Flammable - third degree; Mutagen
New Jersey - Environmental Hazardous Substances List:	SN 0197 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	10 lb RQ (air); 1 lb RQ (land/water)
Toluene	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Developmental toxicity, initial date 1/1/91
New Jersey Right-To-Know:	SN 1866
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree; Teratogen
New Jersey - Environmental Hazardous Substances List:	SN 1866 500 lb TPQ
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
Xylene (mixed isomers)	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 2014
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Present
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Toxic (skin); Flammable (skin)
Michigan Critical Materials Register List:	100 lb Annual usage threshold all isomers
Massachusetts Extraordinarily Hazardous Substances:	Not Listed
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - third degree
New Jersey - Environmental Hazardous Substances List:	SN 2014 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Present
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	1000 lb RQ (air); 1 lb RQ (land/water)
Hydrogen sulfide	
Louisiana Right-To-Know:	Not Listed
California Proposition 65:	Not Listed
New Jersey Right-To-Know:	SN 1017
Pennsylvania Right-To-Know:	Environmental hazard
Massachusetts Right-To Know:	Extraordinarily hazardous
Florida Substance List:	Not Listed
Rhode Island Right-To-Know:	Not Listed
Michigan Critical Materials Register List:	Not Listed

Massachusetts Extraordinarily Hazardous Substances:	Extraordinarily hazardous
California - Regulated Carcinogens:	Not Listed
Pennsylvania RTK - Special Hazardous Substances:	Not Listed
New Jersey - Special Hazardous Substances:	Flammable - fourth degree
New Jersey - Environmental Hazardous Substances List:	SN 1017 TPQ: 500 lb
Illinois - Toxic Air Contaminants:	Not Listed
New York - Reporting of Releases Part 597 - List of Hazardous Substances:	100 lb RQ (air); 100 lb RQ (land/water)

Canada DSL/NDSL Inventory: This product and/or its components are listed either on the Domestic Substances List (DSL) or are exempt.

Notes: Not applicable.

16. OTHER INFORMATION

Prepared By Toxicology & Product Safety

Revision Notes

Revision Date: 10/08/2019

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is intended as guidance for safe handling, use, processing, storage, transportation, accidental release, clean-up and disposal and is not considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.